

**CLAIMS:**

1. A pump comprising: heating means, and a pump body comprising an inlet and an outlet, the pump arrangeable in use such that the pump body includes a volume of gas and a volume of liquid, and such that heating of the volume of gas causes liquid to flow through one of the inlet and the outlet and cooling of the volume of gas causes liquid to flow through the other of the inlet and the outlet, wherein the heating means is arranged with the pump body and the pump body is shaped such that heating of the volume of gas by the heating means promotes substantially non-divergent body movement of the volume of gas.
- 15 2. The pump of claim 1, wherein the heating means is arranged with the pump body and the pump body is shaped such that heating of the volume of gas by the heater promotes body movement of the volume of gas substantially in a single plane.
- 20 3. The pump of claim 1 or 2, wherein the heating means is arranged at a lower part of the pump body.
- 25 4. The pump of any preceding claim, wherein the pump body includes at least one baffle therein, the baffle defining a gas flow passageway between an inner wall of the pump body and the baffle.
- 30 5. The pump of claim 4, wherein the gas flow passageway comprises pipe work.

6. The pump of claim 4 or 5, wherein the gas flow passageway comprises an annular passageway.

7. The pump of claim 6, wherein the gas flow passageway 5 comprises a substantially circular annular passageway.

8. The pump of any one of claims 4 to 6, wherein the gas flow passageway comprises a substantially "P" or "Q" shaped passageway.

10

9. The pump of any preceding claim wherein the pump body comprises a first part arrangeable in use to include the volume of gas, and a second part arrangeable in use to include the volume of liquid, and a diaphragm arranged in 15 use to separate the first part of the pump body from the second part of the pump body.

10. The pump of claim 9 wherein the first and second parts of the pump body are releaseably couplable to one another.

20

11. The pump of claim 9 or 10, wherein the diaphragm is part of the second part of the pump body.

12. A pump comprising: heating means, cooling means and a 25 pump body comprising an inlet and an outlet, the pump body arrangeable in use such that the pump body includes a volume of gas and a volume of liquid arranged such that heating of the volume of gas by the heating means causes liquid to flow through one of the inlet and the outlet, 30 and cooling of the volume of gas by the cooling means causes liquid to flow through the other of the inlet and the outlet.

13. The pump of claim 12, wherein the cooling means is arranged within the pump body.

14. The pump of claim 12 or 13, wherein the cooling means 5 is arranged at an upper portion of the pump body.

15. A pump comprising: heating means, cooling means and a pump body comprising an inlet and an outlet, the pump arrangeable in use such that the pump body includes a 10 volume of gas and a volume of liquid, and such that the heating means heats the volume of gas to cause liquid to flow through one of the inlet and the outlet, and the cooling means cools the volume of gas to cause liquid to flow through the other of the inlet and the outlet, the 15 heating means and cooling means being arranged such that heating of the volume of gas by the heating means and cooling of the volume of gas by the cooling means promote substantially the same circulatory movement in the volume of gas.

20

16. The pump of claim 15, wherein the cooling means is arranged within the pump body.

17. The pump of claim 15 or 16, wherein the cooling means 25 is arranged at an upper portion of the pump body.

18. The pump of claim 15, 16 or 17, wherein the heating means is arranged at a lower part of the pump body.

30 19. The pump of any one of claims 15 to 18, wherein, the heating means is arranged above and laterally offset from the cooling means.

20. The pump of claim 19, wherein the heating means is arranged above and laterally offset from the cooling means such that there is no overlap between them.

5 21. The pump of claim 20, wherein the pump body includes at least one baffle therein, the baffle defining a gas flow passageway between an inner wall of the pump body and the baffle, and wherein the gas flow passageway comprises a rising portion having the heating means arranged therein  
10 and a falling portion having the cooling means arranged therein.

22. The pump of any one of claims 15 to 19, wherein the pump body defines an axially symmetric cavity in which the heating means and cooling means are arranged such that heating of the volume of gas by the heating means and cooling of the volume of gas by the cooling means promote movement in the volume of gas in a pattern defining a substantially toroidal surface.

20  
23. The pump of claim 22, wherein the heating means comprises an annular heating element arranged within the pump body.

25 24. The pump of claim 22 or 23, wherein the cooling means comprises an annular cooling element disposed above and radially outward from the heating element.

30 25. The pump of claim 22 or 23, wherein the cooling means comprises a cooling element disposed above and radially inward from the heating element.

26. A method of operating a pump comprising heating means, and a pump body comprising an inlet and an outlet, arrangeable in use such that the pump body includes a volume of gas and a volume of liquid, the method 5 comprising the step of: (a) heating the volume of gas with the heating means to cause liquid to flow through one of the inlet and the outlet and to promote substantially non-divergent body movement of the volume of gas within the pump body.

10

27 A method of operating a pump comprising heating means, cooling means and a pump body comprising an inlet and an outlet, the pump arrangeable in use such that the pump body includes a volume of gas and a volume of liquid, the 15 method comprising the steps of: (a) heating the volume of gas with the heating means to cause liquid to flow through one of the inlet and outlet; and (b) cooling the volume of gas to cause liquid to flow through the other of the inlet and the outlet.

20

28. A method of operating a pump comprising heating means, cooling means and a pump body comprising an inlet and an outlet, the pump arrangeable in use such that the pump body includes a volume of gas and a volume of liquid, the 25 method comprising steps of: (a) heating the volume of gas with the heating means to cause liquid to flow through one of the inlet and outlet and promote a circulatory movement in the volume of gas; and (b) cooling the volume of gas with the cooling means to cause liquid to flow through the 30 other of the inlet and the outlet and promote substantially the same circulatory movement as in step (a) .